

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 13

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

*Ex parte* WILLIAM J. LUND

Appeal No. 95-5143  
Application 08/219,973<sup>1</sup>

ON BRIEF

**MAILED**

**APR 17 1996**

**PAT.&T.M. OFFICE  
BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Before MEISTER, FRANKFORT and McQUADE, *Administrative Patent Judges.*

McQUADE, *Administrative Patent Judge.*

*DECISION ON APPEAL*

This appeal is from the final rejection of claims 1 through 10, all of the claims pending in the application.

The invention relates to a hydrothermal stabilizing apparatus designed to be connected upstream of a hot water heater to reduce energy consumption, and to a hot water recovery system containing such an apparatus. Claims 1, 3 and 4, the three

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<sup>1</sup> Application for patent filed March 30, 1994.

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independent claims on appeal, are illustrative. Copies of these claims as submitted with the appellant's brief (Paper No. 12) are appended hereto.

The references relied upon by the examiner as evidence of anticipation and obviousness are:

Haws	4,930,551	Jun. 05, 1990
Lund	5,277,219	Jan. 11, 1994

The appealed claims stand rejected as follows:

a) claims 1 through 3 under 35 USC 102(b) as being anticipated by Haws; and

b) claims 4 through 10 under 35 USC 103 as being unpatentable over Lund in view of Haws.

With regard to the first of these rejections, anticipation is established only when a single prior art reference discloses, expressly or under principles of inherency, each and every element of a claimed invention. RCA Corp. v. Applied Digital Data Systems, Inc., 730 F.2d 1440, 221 USPQ 385 (Fed. Cir. 1984).

Haws discloses a hot water recovery system comprising a water heater 12, 14, a fixture 20, a hot water supply line leading from the water heater to the fixture, and a cold water supply line branching to the water heater and to the fixture. The water heater includes an inlet means 24 consisting of a cylinder or tank means 50 having an inlet at its top

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communicating with the cold water supply line and an outlet at its bottom communicating with the water heater, and a piston 52 movably disposed within the cylinder between the inlet and outlet. The lower wall of the cylinder contains slots 86 which allow water to flow around the piston and through the outlet when the piston is in a lower position within the cylinder. The upper surface of the piston carries a rod 30 which extends through the top of the water heater to visibly indicate whether the piston is functioning as intended. Haws teaches that the cylinder, piston and rod may be made of any suitable material that can withstand the temperature of typical domestic hot water heaters (see column 5, lines 55 through 63).

When hot water is drawn from the fixture 20, a pressure drop is created in the water heater which allows cold water to flow into the cylinder through the inlet and force the piston to its lower position wherein the water passes around the piston via the slots 86 and through the outlet into the water heater. When the fixture is shut off, a pressure differential is created between the upper and lower surfaces of the piston which causes the piston to rise to the top of the cylinder. The upward movement of the piston functions to draw water from the hot water supply line back into the water heater so as to reduce thermal losses from unused hot water remaining in the supply line. The

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pressure differential between the upper and lower surfaces of the piston which causes the piston to move from its lower position to its upper position is due to the presence of rod 30 which is exposed to atmospheric pressure instead of to the higher water system pressure (see column 6, lines 1 through 51).

Independent claims 1 and 3 require, inter alia, a tank means and "a buoyant piston, having an air volume therein," with the piston having sufficient buoyancy to rise to the tank means top from a selected lower position when water is not entering the tank means water inlet.

According to the examiner, the Haws piston 52 meets these limitations because it is buoyant, clearly has an air volume therein and exhibits buoyant characteristics (see page 2 in the final rejection (Paper No. 7) and pages 3 through 5 in the answer (Paper No. 10)). The Haws disclosure, however, provides no support for any of these findings. As noted above, Haws discloses that piston 52 moves from its lower position within the cylinder 50 to its upper position due to a pressure differential between its upper and lower surfaces. There is simply nothing in this reference which indicates that piston 52 is buoyant or has an air volume therein as claimed. The examiner's findings in this regard are completely unfounded.

Thus, Haws does not disclose each and every element of the invention recited in independent claims 1 and 3.

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Accordingly, we shall not sustain the standing 35 USC 102(b) rejection of these claims, or of claim 2 which depends from claim 1, as being anticipated by Haws.

Nor shall we sustain the standing 35 USC 103 rejection of independent claim 4, or of claims 5 through 10 which depend therefrom, as being unpatentable over Lund in view of Haws.

To begin with, the Lund reference, the appellant's own patent, is not prior art with respect to the subject matter on appeal because it issued less than a year prior to the filing date of the instant application.

Moreover, independent claim 4 is similar to independent claims 1 and 3 in that it also requires a tank means and "a buoyant piston, having an air volume therein," with the piston having sufficient buoyancy to rise to the tank means top from a selected lower position when water is not entering the tank means water inlet. The examiner's proposed combination of Lund and Haws relies on Haws to supply the recited piston (see 3 in the final rejection (Paper No. 7) and pages 4 and 5 in the answer (Paper No. 10)). Haws not only fails to teach such a piston, it also fails to provide any suggestion of same to one of ordinary skill in the art.

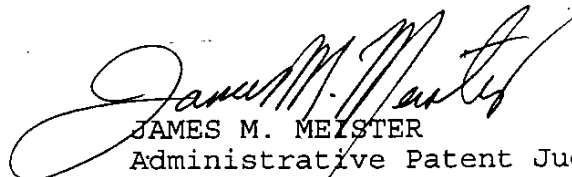
In summary, the decision of the examiner:


a) to reject claims 1 through 3 under 35 USC 102(b) as being anticipated by Haws is reversed; and

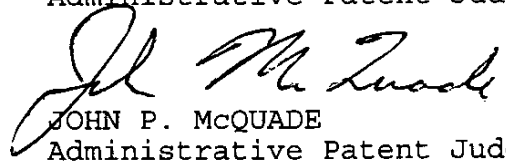
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b) to reject claims 4 through 10 under 35 USC 103 as  
being unpatentable over Lund in view of Haws is reversed.

REVERSED

  
JAMES M. MEISTER )  
Administrative Patent Judge )

  
CHARLES E. FRANKFORT )  
Administrative Patent Judge )

  
JOHN P. McQUADE )  
Administrative Patent Judge )

BOARD OF  
PATENT APPEALS  
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APPENDIX

1. Plumbing apparatus for reducing energy consumption of a hot water heater, said plumbing apparatus comprising:

tank means for containing water, said tank means having a top with a water inlet therein and a bottom with a water outlet therein;

a buoyant piston, having an air volume therein, and said buoyant piston being movably disposed within said tank means and having a perimeter slidably engaging an inside wall of said tank means; and

means for enabling water entering the water inlet to pass by the buoyant piston when the buoyant piston is displaced to a selected lower position in said tank means by the entering water, said buoyant piston having sufficient buoyancy to rise to the tank means top from the selected lower position when water is not entering the tank means water inlet.

3. A hot water recovery system comprising:

a hot water tank having a water inlet and a hot water outlet;

a hot water delivery line connected said hot water outlet and at least one plumbing fixture;

a cold water delivery line connected between said plumbing fixture and a cold water source;

crossover pipe means, connected between said hot and cold water delivery lines, for enabling cold water to flow from the cold water delivery line into the hot water delivery line, said crossover pipe being disposed at a point remote from said hot water source;



tank means for containing water, said tank means having a top with a water inlet therein connected to the cold water source and a bottom with a water outlet therein connected to the hot water tank inlet;

a buoyant piston, having an air volume therein, and said buoyant piston being movably disposed within said tank means and having a perimeter slidably engaging an inside wall of said tank means; and

means for enabling water entering the water inlet to pass by the buoyant piston when the buoyant piston is displaced to a selected lower position in said tank means by the entering water, said buoyant piston having sufficient buoyancy to rise to the tank means top from the selected lower position when water is not entering the tank means water inlet and draw hot water from the hot water source and hot water delivery line into the tank means below the buoyant piston, water from the hot water delivery line being supplied through the crossover pipe from the cold water delivery line.

4. A hot water recovery system comprising:

a hot water heater having a water inlet and a water outlet;

a hot water delivery line connected between said hot water heater and at least one plumbing fixture;

a cold water delivery line connection between said plumbing fixture and a cold water source;

pump means, interconnected between said hot and cold water delivery lines, for circulation of water from the hot water delivery line through the cold water delivery line and into the hot water heater;

control means for causing the pump means to circulate water from the hot water line into the cold water line proximate said plumbing fixture and back to the hot water heater when a hot water valve on said plumbing fixture is turned on;

temperature sensor means, connected to said control means, for causing said control means to stop the pump means to prevent heated water from being circulated through the cold water delivery line;

tank means for containing water, said tank means having a top with a water inlet therein connected to the cold water source and a bottom with a water outlet therein connected to the hot water heater inlet;

a buoyant piston, having an air volume therein, said buoyant piston being movably disposed within said tank means and having a perimeter slidably engaging an inside wall of said tank means; and

means for enabling water entering the tank means water inlet to pass by the buoyant piston when the buoyant piston is displaced to a selected lower position in said tank means by the entering water, said buoyant piston having sufficient buoyancy to rise to the tank means top from the selected lower position when water is not entering the tank means water inlet.